

United States Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Research Laboratories
Global Monitoring Division
Aerosols group

This area is a public access point to selected data obtained from
GMD aerosol sampling stations.

This document gives a general overview of the directory layout in this area, and the process for retrieving these data. Please familiarize yourself with the documentation files before using these data, so as to avoid misinterpretation. We also strongly recommend contacting a NOAA/GMD Aerosol group scientist to discuss your interpretation of the data. See email address provided below.

-----ACCESS POINTS-----

FTP: <ftp://aftp.cmdl.noaa.gov/aerosol>
WWW: <http://www.esrl.noaa.gov/gmd/aero/>

Data formats: DESCRIBED BELOW

Questions/comments:

E-mail: <mailto:Patrick.Sheridan@noaa.gov>

-----NOTICE-----

When using these data in a publication or presentation, you should acknowledge the National Oceanic and Atmospheric Administration (NOAA), Global Monitoring Division (GMD), Aerosols Group.

The NOAA/GMD scientists would appreciate being notified of any studies involving the data. We would also like to receive drafts of presentations and publications to ensure that the quality and limitations of the NOAA/GMD data are accurately represented. Feedback from users may also help us to improve the quality of the data and the location of the sampling sites. Comments regarding the README files and the data files are encouraged. Please send comments to the e-mail address given above.

-----WARNING-----

Users should read and understand all "README" and other documentation files before using these data, to avoid misinterpretation of the measurements. NOAA/GMD has attempted to provide the most precise measurements possible. We reserve the right to modify these files when necessary.

-----Directory layout for this area:-----

doc/ - Documentation of the aerosol system, data corrections and analysis.
PLEASE FAMILIARIZE YOURSELF WITH THESE DOCUMENTS!

articles/ - articles describing data corrections and measured and
calculated parameters

overview/ - overview description of basic GMD aerosol system
drawings/stations/ - drawings of various parts of the sampling system
drawings/stn/ - flow diagrams for individual stations

There are 8 station directories with sub-directories for each year of data collected.

aao/ - Airborne Aerosol Observatory (aerosol profiles over Bondville, Illinois, USA*)

bnd/ - Bondville, Illinois, USA

brw/ - Barrow, Alaska, USA

mlo/ - Mauna Loa Observatory, Hawaii, USA

smo/ - American Samoa

spo/ - South Pole Observatory

sum/ - Summit, Greenland

thd/ - Trinidad Head Observatory, California, USA

wsa/ - Sable Island, Nova Scotia, Canada

-----Data file formats:-----

There are two formats of data files provided for each station and year.

(1) NCDC netcdf format

This file contains the hourly-averaged data for the given year for *all* of the basic parameters measured at that station (i.e., number concentration, sub10um and/or sub1um

light scattering and/or light absorption). It will not include ancillary measurements that

may be made at the stations (e.g., CCN, f(RH), met data)

File naming convention for netcdf format files:

AEROSOL_HOUR_{STN}_{start_time}_{end_time}_{gen_time}.nc

where:

{STN}=three letter abbreviation for station, e.g., Barrow=BRW

{start_time} is the start time of the measurements in the file in

YYYYMMDDTHHmmSSZ format

{end_time} is the end time of the measurements in the file in YYYYMMDDTHHmmSSZ format

{gen_time} is the time the file was generated in YYYYMMDDTHHmmSSZ format

(2) NASA-AMES format with the expanded EBAS specified header

These are human-readable ascii files. There is one hourly-averaged file for each basic parameter

measured at that station. The EBAS format for the different measurements (light absorption, light

scattering and particle number concentration is described here:

<http://www.gaw-wdca.org/Submit-Data/Regular-Annual-Data-Reporting/Integrating-Nephelometer-regular>

<http://www.gaw-wdca.org/Submit-Data/Regular-Annual-Data-Reporting/Filter-Absorption-Photometer-regular>

<http://www.gaw-wdca.org/Submit-Data/Regular-Annual-Data-Reporting/Condensation-Particle-Counter-regular>

File naming convention for NASA-AMES format files:

{EBAS_stn_code}.{start_time}.{gen_time}.{variable}.aerosol.1y.1h.lev2.nas.gz

where:

{EBAS_stn_code} is the EBAS station code, e.g., Barrow=US0008R

{start_time} is the start time of the measurements in the file in YYYYMMDDHHmmSS format

{gen_time} is the time the file was generated in YYYYMMDDTHHmmSSZ format

(3) *AAO files have the format described here:

<https://www.esrl.noaa.gov/gmd/aero/data/datafmt.html#hgeS>

contact Dr. Patrick Sheridan for more details

-----Data description:-----

Data are hourly-averaged with the timestamp representing the start of each hourly averaging time.

Timestamp is UTC.

Data are reported at STP ($T_{std}=0$ C) and have been corrected for known non-idealities.

Data have undergone QA/QC and points considered invalid or contaminated by the station mentor are

not included in the hourly-averaged values.

Instrument descriptions and sampling conditions are included in the file header information.

Questions/comments:

E-mail: <mailto:Patrick.Sheridan@noaa.gov>

-----Retrieval of datafiles:-----

To transfer these files do the following steps from the ftp prompt:

1. ftp> bin ! set transfer mode to binary
2. ftp> cd (directory) ! change to directory
3. ftp> recv (filename).zip ! receive the file
4. ftp> bye ! leave ftp
5. \$ unzip (filename).zip ! unzip your local copy, if necessary

-----References:-----

These are journal articles and reports by NOAA/GMD authors describing aerosol measurements at the

various NOAA surface stations. We keep an updated list of aerosol group publications from

2010-present here:

<ftp://aftp.cmdl.noaa.gov/aerosol/doc/newsletter/publications.html>

Andrews, E., Ogren, J.A., Bonasoni, P., Marinoni, A., Cuevas, E., Rodriguez, S., Sun, J.Y., Jaffe, D.A., Fischer, E.V., Baltensperger, U., Weingartner, E., Collaud Coen, M., Sharma, S., Macdonald, A.M., Leaitch, W.R., Lin, N.-H., Laj, P.,

Arsov, T., Kalapov, I., Jefferson, A., Sheridan, P.J., Climatology of aerosol radiative properties in the free troposphere, *Atmospheric Research*, 102, 365-393, 2011.

Andrews, E., Sheridan, P.J., Fiebig, M., McComiske, M., Ogren, J. A., Arnott,

- P., Covert, D., Elleman, R., Gasparini, R., Collin, D., Jonsson, H., Schmid, B., Wang, J., Comparison of methods for deriving aerosol asymmetry parameter, *J. Geophys. Res.*, Vol. 111, No. D5, D05S04, 10.129/2004JD005734 2006.
- Bodhaine, B. A., and M. E. Murphy, Calibration of an automatic condensation nuclei counter at the South Pole, *J. Aerosol Sci.*, 11, 305-312, 1980.
- Bodhaine, B. A., The GMCC four-wavelength nephelometer, In *Light Absorption by Aerosol Particles*, H. E. Gerber and E. E. Hidy (Eds.), Spectrum, Hampton, VA, 149-168, 1982.
- Bodhaine, B. A., Aerosol measurements at four background sites, *J. Geophys. Res.*, 88, 10753-10768, 1983.
- Bodhaine, B. A., and J. J. DeLuise, An aerosol climatology of Samoa, *J. Atmos. Chem.*, 3, 107-122, 1985.
- Bodhaine, B. A., J. J. DeLuise, J. M. Harris, P. Hummer, and S. Bauman, Aerosol measurements at the South Pole, *Tellus*, 38, 223-235, 1986.
- Bodhaine, B. A., The Barrow aerosol record, 1976-1984, In *Arctic Air Pollution*, B. Stonehouse (Ed.), Cambridge, 159-173, 1986.
- Bodhaine, B. A., Barrow surface aerosol: 1976-1986 *Atmos. Environ.*, 23, 2357-2369, 1989.
- Bodhaine, B. A., and M. K. Shanahan, Condensation nucleus and aerosol scattering extinction measurements at the South Pole Observatory: 1979-1988, NOAA Data Rep. ERL CMDL-1, Climate Monitoring and Diagnostics Laboratory, Boulder, Colorado, 148 pp., 1990.
- Bodhaine, B. A., N. C. Ahlquist, and R. C. Schnell Three-wavelength nephelometer suitable for aircraft measurement of background aerosol scattering coefficient, *Atmos. Environ.*, 25A, 2267-2276, 1991.
- Bodhaine, B. A., and J. M. Harris, Aerosol measurements at the South Pole during 1987, NOAA Data Rep. ERL CMDL-9, Climate Monitoring and Diagnostics Laboratory, Boulder, CO, 120 pp., 1992.
- Delene, D.J. and J. A. Ogren, Variability of aerosol optical properties at four North American surface monitoring sites, *J. Atmos. Sci.*, 59, 1135-1150, 2002.
- Fiebig, M., and J. A. Ogren, Retrieval and climatology of the aerosol asymmetry parameter in the NOAA aerosol monitoring network, *J. Geophys. Res.*, 111, D21204, doi:10.1029/2005JD006545, 2006.
- Murphy, M. E., and B. A. Bodhaine, The Barrow, Alaska automatic condensation nuclei counter and four wavelength nephelometer Instrument details and four years of observations, NOAA Tech. Memo, ERL ARL-90, Air Resources Laboratories, Silver Spring, MD, 101 pp., 1980.
- Massey, D. M., T. K. Quakenbush, and B. A. Bodhaine, Condensation nuclei and aerosol scattering extinction measurements at Muna Loa Observatory: 1974-1985, NOAA Data Rep., ERL ARL-14, Air Resources Laboratory, Silver Spring, MD, 174 pp., 1987.
- Quakenbush, T. K., and B. A. Bodhaine, Surface aerosols at the Barrow GMCC Observatory: Data from 1976 through 1985, NOAA Data Rep., ERL ARL-10, Air Resources Laboratory, Silver Spring, MD, 23 pp., 1986.

Quinn, P.K., Miller, T.L., Bates, T.S., Ogren, J.A, Andrews, E., Shaw, G.E.,
A Three-Year Record of Simultaneously Measured aerosol Chemical and Optical
Properties at Barrow, Alaska, J. Geophys. Res. 107, 4130-4145, 2002.

Quinn, P., Andrews, E., Christensen, J., Dutton, E, Shaw, G., Arctic Haze
(chapter 4),
AMAP Assessment Report Acidifying pollutants, Arctic haze, and acidification
in the Arctic, 2005

Sharma, S., Andrews, E., Barrie, L.A. and Ogren, J.A., Variations and sources
of the equivalent black carbon in the high Arctic revealed by long term
observations
at Alert and Barrow: 1989-2003, J. Geophys. Res 111 (D14): Art. No. D14208,
2006.

Sheridan, P.J., Delene, D.J. and Ogren, J.A., For years of continuous surface
aerosol measurements from the Department of Energy's Atmospheric Radiation
Measurement Program Southern Great Plains Cloud and Radiation Testbed site,
J. Geophys. Res., 106, 20735-20747, 2001.

Spracklen, D. V., Carslaw, K. S., Merikanto, J., Munn, G. W., Pickering, S.,
Ogren, J. A., Andrews, E., Baltensperger, U., Wingartner, E., Boy, M.,
Kulmala,
M., Laakso, L., Lihavainen, H., Kivekäs, N., Mihalopoulos, N., Kouvarakis,
G.,
Jennings, S. G., Birmili, W., Wiedensohler, A., Weller, R., Laj, P., Sellegri,
K.,
Bonn, B., and Krejci, R.: Explaining global surface aerosol number
concentrations
in terms of primary emissions and particle formation, Atmos. Chem. Phys.,
4775-4793, 2010.

Questions / Comments / Suggestions

e-mail : Patrick.Sheridan@noaa.gov
